BASIS FOR THE AMENDMENT

Claim 5 has been amended as supported by the specification and claims as originally filed, for example at page 15 of the specification.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 5, 8-17 will now be active in this application.

REMARKS

Applicants wish to thank Examiner Kruer for the helpful discussion on May 18, 2009. Claim 5 as amended was discussed. The Examiner indicated that he may consider the amended claim favorably.

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks. The language of amended Claim 5 is intrinsically supported at page 15 of the specification.

Amended Claim 5 relates to a multilayer sheet, which comprises:

(a) a substrate layer of an elastomeric styrene polymer, said elastomeric styrene polymer comprising

(i) from 1 to 20 parts by mass of a dispersed phase of an elastomer, based on 100 parts by weight of the elastomeric styrene polymer, said elastomer comprising

from 30 to 50 mass% of styrene monomer units, and

from 70 to 50 mass% of butadiene monomer units, and

(ii) from 99 to 80 parts by mass of a continuous phase of a polymer, based on 100 parts by weight of the elastomeric styrene polymer, said polymer comprising

from 35 to 75 mass% of styrene monomer units, and

from 65 to 25 mass% of (meth)acrylate monomer units, and

(b) a surface layer consisting of a styrene polymer comprising from 35 to 75 mass% of styrene monomer units and from 65 to 25 mass% of (meth)acrylate units, formed on each side of the substrate layer; and

wherein the total thickness of said multilayer sheet is from 50 to 2,000 μm, and the thickness of the surface layer is from 3 to 20% of the total thickness.

Auclair (US 5,932,655), and Adams (US 4,927,675) fail to disclose or suggest a sheet as claimed in Claim 5 which comprises:

(a) a substrate layer of an elastomeric styrene polymer, said elastomeric styrene polymer comprising

(i) from 1 to 20 parts by mass of a dispersed phase of an elastomer, based on 100 parts by weight of the elastomeric styrene polymer, and

(ii) from 99 to 80 parts by mass of a continuous phase of a polymer, based on 100 parts by weight of the elastomeric styrene polymer.

Thus, Auclair no longer reads on the relative amounts of dispersed and continuous phase. Adams does not cure this defect. See also page 4, first paragraph of the Office Action.

Further, as described in "INDUSTRIAL APPLICABILITY", the main effect obtained by the above multilayer sheet is "to obtain a transparent sheet which is free from deterioration in the appearance (transparency) even when subjected to vacuum forming and which is excellent in physical strength and excellent in economical efficiency and recycling properties". See page 41 of the specification.

The above effect can be obtained for the first time by the specific resin compositions of the surface layers and the substrate layer of the present invention as claimed in Claim 5.

Further, the claimed laminate exhibits unexpected results which patentably distinguish the claimed product from the prior art. Tables 6 and 7 with Comparative

Examples 3 and 4 have poor transparency due to the lack of elastomer on the surface side of the laminate. "Consisting of" now excludes the presence of elastomer materials from the surface layer.

This is not disclosed or suggested by Auclair (US 5,932,655), and Adams (US 4,927,675), alone or in combination.

The following is a detailed explanation of the examples of the specification as they relate to Claims 5 and following. **The Examples for multilayer sheets comprising a surface layer/substrate layer/surface layer wherein the elastomeric styrene polymer is used for the substrate layer are described starting at page 28 of the specification.**

The compositions of the polymers P1-P5 which are used in the Examples and Comparative Examples are shown in Table 4 at page 31 of the specification and are reproduced below. The properties of polymers P1-P5 are shown in Table 5 at page 42 of the specification and are reproduced below.

Table 4

	Ratio of constituting units (mass%)			Content of elastomer (mass%)	Content of copolymer 2 (mass%)
	Styrene monomer	Acrylate monomer			
	St	MMA	n-BA		
P1	58.6	35.9	5.5	9.8	0
P2	52.9	48.1	0	0	0
P3	42	58	0	0	0
P4	58.6	36.0	5.4	7.8	20
P5	100	0	0	0	0

Table 5

Styrene copolymer	Physical properties			
	Izod impact strength (kJ/m^2)	MFR (g/10min)	Haze (%)	Refractive index
P 1	8.5	2.6	2.1	1.549
P 2	1.7	2.5	0.6	1.546
P 3	1.8	1.9	0.5	1.536
P 4	10.1	2.5	1.9	1.549
P 5	1.8	1.9	0.5	1.595

Using the above elastomeric styrene polymer and styrene polymers (P1 to P5), multilayer sheets of various constructions were prepared by means of a T-die system multilayer extruder.

Using materials of P1 to P5, sheets having layer structures as identified in Tables 6 and 7, were prepared. Further, each of the obtained sheets was formed into a cup shaped product as shown in Fig. 1 of the specification by a vacuum-forming machine. Evaluation results of such sheets and formed products are shown in Tables 6 and 7.

Tables 6 and 7

Tables 6 and 7 are reproduced from pages 38 and 39 of the specification and explained in detail below.

Table 6

			Ex.4	Ex.5	Ex.6	Ex.7	Ex.8	Ex.9
Sheet (layer structure)	A	Type	P2	P2	P3	P2	P2	P2
		Wall thickness (mm)	0.03	0.03	0.03	0.03	0.03	0.05
	B	Type	P1	P1	P1	P1	P4	P1
		Wall thickness (mm)	0.75	0.5	0.75	1.75	0.75	0.75
	C	Type	P2	P1	P3	P2	P2	P2
		Wall thickness (mm)	0.03	0.03	0.03	0.01	0.03	0.03
	Total wall thickness (mm)		0.81	0.56	0.81	1.79	0.81	0.83
(Productivity of sheet)	Folding test		○	○	○	○	○	○
(Physical properties of sheet)	Transparency (visual observation)		○	○	○	○	○	○
	Haze %		1.4	1.3	1.4	1.8	1.3	1.4
(Cup: Formed product (physical properties of formed product)	Transparency (visual observation)		○	○	○	○	○	○
	Impact test		○	○	○	○	○	○
Recycled sheet (Recycling properties)	Haze %		1.9	1.9	4.3	1.8	1.8	1.9
	Recycling properties		○	○	○	○	○	○

Table 7

			Comp. Ex. 3	Comp. Ex. 4	Comp. Ex. 5	Comp. Ex. 6	Comp. Ex. 7
Sheet (layer structure)	A	Type			P2	P5	
		Wall thickness (mm)			0.15	0.05	
	B	Type	P1	P4	P1	P1	P2
		Wall thickness (mm)	0.8	0.8	0.65	0.75	0.8
	C	Type			P2	P5	
		Wall thickness (mm)			0.03	0.03	
	Total wall thickness (mm)		0.8	0.8	0.83	0.83	0.8
(Productivity of sheet)	Folding test		○	○	×	○	×
(Physical properties of sheet)	Transparency (visual observation)		○	○	○	○	○
	Haze %		2	1.8	1.4	1.5	1
(Cup: Formed product (physical properties of formed product)	Transparency (visual observation)		×	×	○	○	×
	Impact test		○	○	○	○	×
Recycled sheet (Recycling properties)	Haze %		2	1.8	1.8	36.2	0.8
	Recycling properties		○	○	○	×	○

The polymers used in the Examples and Comparative Examples are shown at

EXAMPLES 4-8

Example 4: **standard example for a multilayer sheet** comprising a substrate layer and surface layers **of Claim 5** (**Result**: particularly excellent in transparency and impact test after vacuum-forming).

Example 5: **one embodiment of Claim 6**, which is an example employing an **elastomeric styrene polymer (P1) on one surface layer**.

Example 6: The **same example as Example 4** ***except*** that the surface layer is rich of MMA (Result: Fogging on the recycled sheet was observed a little, but it is within tolerant level).

Examples 7 and 9: The **same example as Example 4** ***except*** that the thickness is different.

Example 8: The **same example as Example 4** ***except*** that the material of the substrate layer is different.

COMPARATIVE EXAMPLES 3-7

Comparative Example 3: The **same example as Example 4** ***except*** that the sheet comprises only a substrate layer i.e. **no surface layer** (Result: poor in transparency after vacuum forming).

Comparative Example 4: **same as Example 8** ***except*** that the sheet comprises only a substrate layer i.e. **no surface layer** (Result: poor in transparency after vacuum forming).

In a case where an elastomeric styrene polymer is on the surface layer, fogging is observed on the surface of a formed product by vacuum forming. It is considered that fogging is attributable to the difference of the refractive index between the surface side and

inside which is caused by deformation of elastomer particles in the vicinity of the surface side, etc. at the time of vacuum forming.

Comparative Example 5: A case where a **surface layer is too thick**. (Result: Poor on folding test).

Comparative Example 6: A case where a **surface layer is made of PS** (Result: No recycling property).

Comparative Example 7: A **single substrate layer containing *NO* elastomeric styrene polymer** (Result: Deficient in transparency and impact test after molding).

Therefore, the rejection of the claims under 35 U.S.C. § 103(a) over Auclair (US 5,932,655) in view of Ueyama (US 5,284,884) and Ueda (US 5,886,098) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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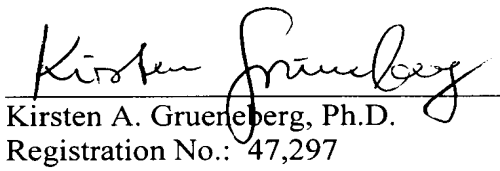
Norman F. Oblon



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